MESSAGE SYSTEMS

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OVERHEAD CONSOLE

DESCRIPTION

The overhead consoles on LH models can include the Electronic Vehicle Information Center (EVIC) system (Fig. 2) or the Overhead Travel Information System (OTIS) (Fig. 1). All overhead consoles are equipped with two reading and courtesy lamps. Vehicles equipped with a power sunroof, will have the sunroof control switch located between the two reading and courtesy lamps. The overhead console is mounted with one screw and two snap clips to a molded plastic retainer bracket located above the headliner.

OPERATION

Refer to the vehicle Owner's Manual for specific operation of each overhead console and its systems.

DIAGNOSIS AND TESTING - OVERHEAD CONSOLE

The most reliable, efficient, and accurate means to diagnose the overhead console or related system requires the use of a DRB III® scan tool and the Service and Body Diagnostic Procedures Manuals. The DRB III® scan tool can provide vital information to the technician trying to find a problem with a overhead console component. Diagnostic logic is built into the overhead console mounted module to help the person trying to locate the problem by the most efficient means possible. Anytime a problem is suspected, a DRB III® scan tool must be obtained and used to retrieve any stored fault codes in the module. If diagnostic fault codes are present in the module, record them on a piece of paper immediately before proceeding any further. Then, use these fault codes to identify the problem by verifying the fault code.

OVERHEAD CONSOLE (Continued)

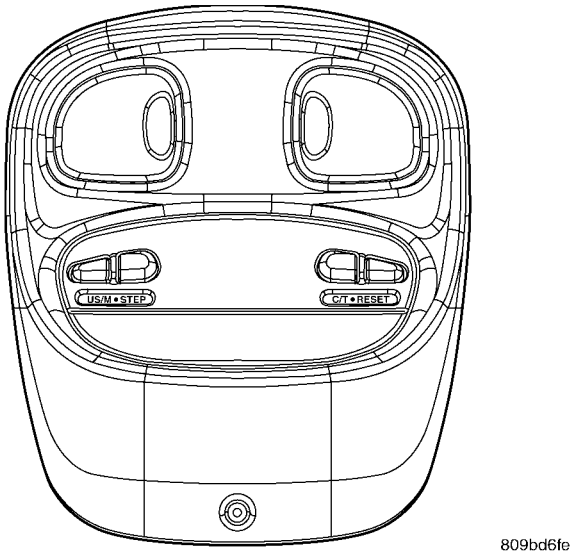


Fig. 1 Overhead Console Without Universal Transmitter

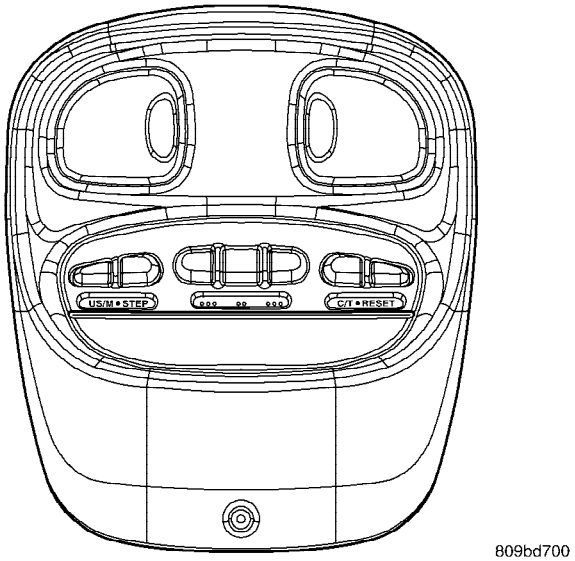


Fig. 2 Overhead Console With Universal Transmitter

Example, If the module records "**TIRE PRESSURE N/A**" fault, locate the diagnostic procedure for this code in the appropriate Body Diagnostic Procedures Manual and follow the flow chart until the specific problem is located and resolved. Once the problem is thought to be corrected, erase the stored fault code using the DRB III® scan tool and verify correct system operation. If the tire pressure monitoring system is functioning correctly, verify that there are no other stored codes in the module and return the vehicle to service.

If the fault code could not be verified, such as not finding anything wrong when following the diagnostic flow chart in the Body Diagnostic Procedures Manual. This is a good indication that a INTERMITTENT problem may be present. You must than attempt to find the intermittent problem, such as running a tire pressure monitoring system self test. Refer to the Tires/Wheels section for more information. Always, eliminate all other potential problems before attempting to replace the module.

TESTING VOLTAGE AND GROUND SUPPLY TO OVERHEAD CONSOLE

(1) Remove the overhead console from the headliner (Refer to 8 - ELECTRICAL/OVERHEAD CONSOLE - REMOVAL) Disconnect the overhead console electrical connector. Check the fused B(+) circuit in the overhead console electrical connector. If OK, go to Step 2. If not OK, repair the open circuit or component as required. Refer to the Wiring section for detailed schematics.

(2) Check the IGN RUN B(+) circuit in the overhead console electrical connector. If OK, go to Step 3. If not OK, repair the open IGN RUN B(+) circuit as required.

(3) Check the Ground circuit in the overhead console electrical connector. If OK, go to Step 4. If not OK, repair the open ground circuit as required.

(4) If the tire pressure monitoring system is not operating properly, refer to the Tires/Wheels section for more information on the tire pressure monitoring system.

NOTE: If the compass functions, but accuracy is suspect, it may be necessary to perform a variation adjustment. This procedure allows the compass unit to accommodate variations in the earth's magnetic field strength, based on geographic location. Refer to Compass Variation Adjustment in the Standard Procedures section of this group.

NOTE: If the compass reading displays dashes, and only "CAL" appears in the display, demagnetizing may be necessary to remove excessive residual magnetic fields from the vehicle. Refer to Compass Demagnetizing in the Standard Procedures section of this group.

STANDARD PROCEDURE

STANDARD PROCEDURE - MODULE LAMP REPLACEMENT

(1) Remove the overhead console (Refer to 8 - ELECTRICAL/OVERHEAD CONSOLE - REMOVAL).

(2) Using a flat blade screwdriver twist out socket/lamp (Fig. 3).

(3) Replace lamp(s) as necessary.

OVERHEAD CONSOLE (Continued)

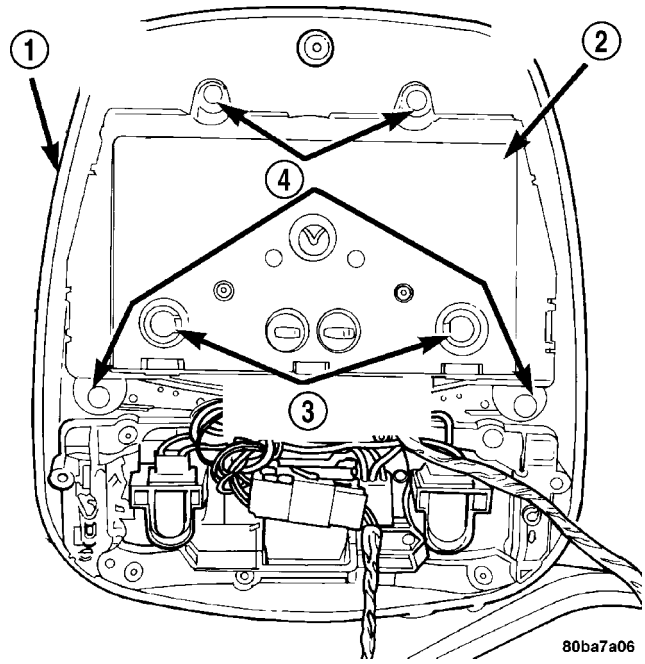


Fig. 3 Top of Overhead Console

1 - OVERHEAD CONSOLE HOUSING
2 - EVIC MODULE
3 - ILLUMINATION LAMPS
4 - SCREWS (4)

STANDARD PROCEDURE - COURTESY LAMP REPLACEMENT

(1) Open hood, disconnect and isolate the negative battery cable.

(2) Remove the overhead console from the headliner (Refer to 8 - ELECTRICAL/OVERHEAD CONSOLE - REMOVAL).

(3) Remove the lamp and socket assembly from the overhead console.

(4) Remove the lamp bulb by pulling it straight out of its socket.

STANDARD PROCEDURE - MODULE LENS REPLACEMENT

(1) Remove the overhead console (Refer to 8 - ELECTRICAL/OVERHEAD CONSOLE - REMOVAL).

(2) Remove the electronics module from the overhead console. Refer to the procedure in this section.

(3) Unsnap the lens from the module and replace lens as necessary.

STANDARD PROCEDURE - COMPASS CALIBRATION

CAUTION: Do not place any external magnets, such as magnetic roof mount antennas, in the vicinity of the compass. Do not use magnetic tools when servicing the overhead console.

The electronic compass unit features a self-calibrating design, which simplifies the calibration procedure. This feature automatically updates the compass calibration while the vehicle is being driven. This allows the compass unit to compensate for small changes in the residual magnetism that the vehicle may acquire during normal use. If the compass readings appear to be erratic or out of calibration, perform the following calibration procedure. Also, new service replacement Electronic Vehicle Information Center (EVIC) modules must have their compass calibrated using this procedure. Do not attempt to calibrate the compass near large metal objects such as other vehicles, large buildings, or bridges; or, near overhead or underground power lines.

NOTE: Whenever an EVIC module is replaced, the variance number must also be reset. Refer to Compass Variation Adjustment in this group.

Calibrate the compass manually as follows:

(1) Turn the ignition switch to the On position. If the compass/temperature data is not currently being displayed, momentarily depress and release the C/T push button to reach the compass/temperature display.

(2) Depress the Reset push button and hold the button down until “CAL” appears in the display. This takes about ten seconds, and appears about five seconds after “VARIANCE = XX” is displayed.

(3) Release the Reset push button.

(4) Drive the vehicle on a level surface, away from large metal objects and power lines, through one complete circle at between five and eight kilometers-per-hour (three and five miles-per-hour) in not less than 20 seconds. The “CAL” message will disappear from the display to indicate that the compass is now calibrated.

NOTE: If the “CAL” message remains in the display, either there is excessive magnetism near the compass, or the unit is faulty. Repeat the calibration procedure one more time.

NOTE: If the wrong direction is still indicated in the compass display, the area selected for calibration may be too close to a strong magnetic field. Repeat the calibration procedure in another location.

STANDARD PROCEDURE - COMPASS DEMAGNETIZING

A degaussing tool (Special Tool 6029) is used to demagnetize, or degauss, the overhead console forward mounting screw and the roof panel above the overhead console. Equivalent units must be rated as

OVERHEAD CONSOLE (Continued)

continuous duty for 110/115 volts and 60 Hz. They must also have a field strength of over 350 gauss at 7 millimeters (0.25 inch) beyond the tip of the probe.

To demagnetize the roof panel and the overhead console forward mounting screw, proceed as follows:

(1) Be certain that the ignition switch is in the Off position, before you begin the demagnetizing procedure.

(2) Connect the degaussing tool (Fig. 4) to an electrical outlet, while keeping the tool at least 61 centimeters (2 feet) away from the compass unit.

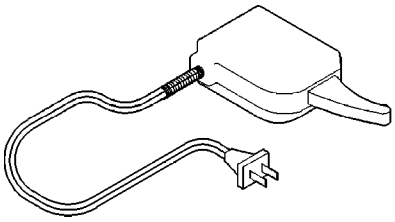


Fig. 4 Degaussing Tool 6029

(3) Slowly approach the head of the overhead console forward mounting screw with the degaussing tool connected.

(4) Contact the head of the screw with the plastic coated tip of the degaussing tool for about two seconds.

(5) With the degaussing tool still energized, slowly back it away from the screw. When the tip of the tool is at least 61 centimeters (2 feet) from the screw head, disconnect the tool.

(6) Place a piece of paper approximately 22 by 28 centimeters (8.5 by 11 inches), oriented on the vehicle lengthwise from front to rear, on the center line of the roof at the windshield header (Fig. 5). The purpose of the paper is to protect the roof panel from scratches, and to define the area to be demagnetized.

(7) Connect the degaussing tool to an electrical outlet, while keeping the tool at least 61 centimeters (2 feet) away from the compass unit.

(8) Slowly approach the center line of the roof panel at the windshield header, with the degaussing tool connected.

(9) Contact the roof panel with the plastic coated tip of the degaussing tool. Be sure that the template is in place to avoid scratching the roof panel. Using a slow, back-and-forth sweeping motion, and allowing 13 millimeters (0.50 inch) between passes, move the tool at least 11 centimeters (4 inches) to each side of the roof center line, and 28 centimeters (11 inches) back from the windshield header.

(10) With the degaussing tool still energized, slowly back it away from the roof panel. When the tip of the tool is at least 61 centimeters (2 feet) from the roof panel, disconnect the tool.

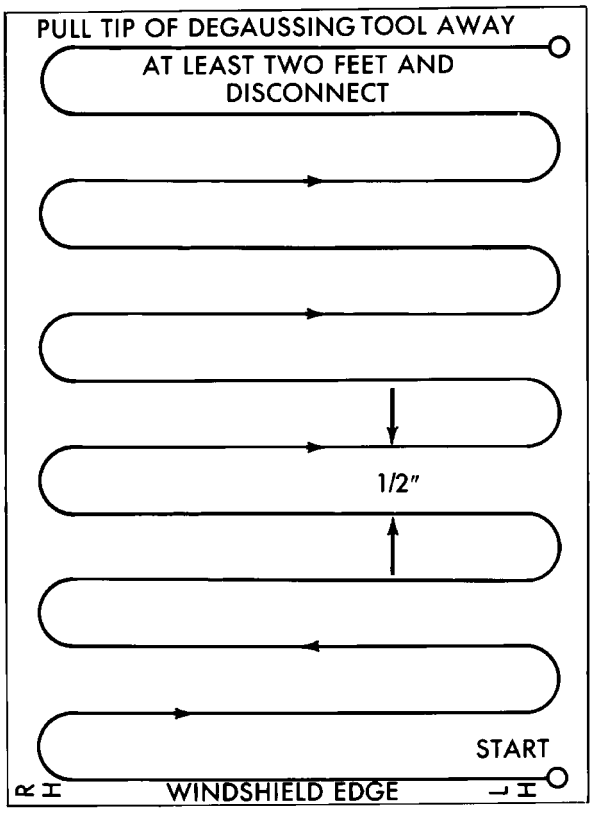


Fig. 5 Roof Demagnetizing Pattern

(11) Calibrate the compass and adjust the compass variance (Refer to 8 - ELECTRICAL/OVERHEAD CONSOLE - STANDARD PROCEDURE).

STANDARD PROCEDURE - COMPASS VARIATION ADJUSTMENT

Compass variance, also known as magnetic declination, is the difference in angle between magnetic north and true geographic north. In some geographic locations, the difference between magnetic and geographic north is great enough to cause the compass to give false readings. If this problem occurs, the compass variance setting may need to be changed.

To set the compass variance:

(1) Using the Variance Settings map, find your geographic location and note the zone number (Fig. 6).

(2) Turn the ignition switch to the On position. If the compass/temperature data is not currently being displayed, momentarily depress and release the C/T push button to reach the compass/temperature display.

(3) Depress the Reset push button and hold the button down until “VARIANCE = XX” appears in the display. This takes about five seconds.

OVERHEAD CONSOLE (Continued)

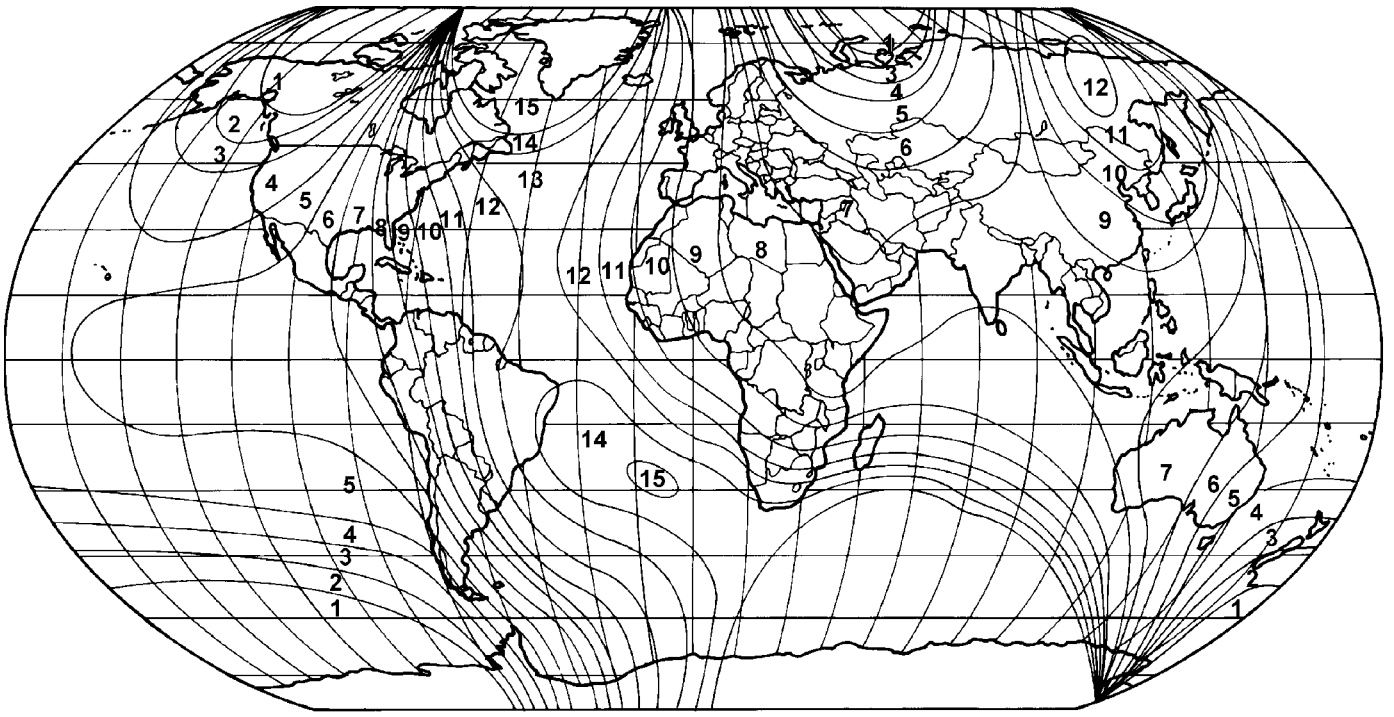


Fig. 6 Variance Settings

(4) Release the Reset push button. “VARIANCE =XX ” will remain in the display. “XX” equals the current variance zone setting.

(5) Momentarily depress and release the Step push button to step through the zone numbers, until the zone number for your geographic location appears in the display.

(6) Momentarily depress and release the Reset push button to enter the displayed zone number into the EVIC module memory.

(7) Confirm that the correct directions are now indicated by the compass.

STANDARD PROCEDURE - ELECTRONIC VEHICLE INFORMATION CENTER PROGRAMMING

EVIC PROGRAMMING MODE

The Electronic Vehicle Information Center (EVIC) provides the vehicle operator with a user interface, which allows the selection of several optional customer programmable electronic features to suit individual preferences. The EVIC must be placed into its programming mode in order to view or change the programmable features. To enter the EVIC programming mode and to view or change the selected programmable features options, proceed as follows:

(1) Turn the ignition switch to the On position.

(2) Depress and release the Menu push button. The first item in the programmable features menu list will appear in the EVIC display.

(3) Momentarily depress and release the Menu push button to step through the programmable features list. Each programmable feature and its currently selected option will appear on the EVIC display in the sequence shown in the Programmable Features list that follows.

(4) Momentarily depress and release the Step push button to step through the available options for the programmable feature being displayed.

(5) The option that last appears in the display with a programmable feature before exiting the programming mode, becomes the newly selected programmable feature option.

(6) The EVIC exits the programming mode and returns to its normal operating mode when the C/T push button is depressed or when the end of the programmable features menu list is reached, whichever occurs first.

PROGRAMMABLE FEATURES

- **LANGUAGE?** - The options include English, Francaise, Deutsch, Italiana, or Espanol. The default is English. All EVIC display nomenclature, including the trip computer functions, warning messages and the programmable features appear in the selected language.

OVERHEAD CONSOLE (Continued)

- **DISPLAY U.S. OR METRIC?** - The options include U.S. and M. The default is U.S. This feature toggles the trip computer temperature, fuel economy and odometer display readings between U.S. and metric units of measure. It also changes the odometer display in the instrument cluster.
- **AUTO DOOR LOCKS?** - The options include Yes and No. The default is Yes. When Yes is selected, all doors lock automatically when vehicle speed reaches 25 kilometers-per-hour (15 miles-per-hour). If YES is selected, a second programmable feature appears, **AUTO UNLOCK ON EXIT?** - The options again include Yes and No. The default is No. When Yes is selected, following each Auto Door Lock event all doors will automatically unlock when the driver door is opened, if the vehicle is stopped and the transmission gear selector is in Park or Neutral. The Auto Door Unlock event will only occur once following each Auto Door Lock event.
- **REMOTE UNLOCK** - The options include Driver Door 1st and All Doors. The default is Driver Door 1st. When Diver Door 1st is selected, only the driver door unlocks when the Unlock button of the Remote Keyless Entry (RKE) transmitter is depressed once. The Unlock button of the RKE transmitter must be depressed twice to unlock all doors. When All Doors is selected, all doors unlock when the Unlock button of the RKE transmitter is depressed once.
- **REMOTE LINKED TO MEMORY?** - This programmable feature only applies to vehicles equipped with the optional memory / heated system. The options include Yes and No. The default is No. When Yes is selected, the memory system will recall the Driver 1 or Driver 2 memory settings assigned to the RKE transmitter being used to unlock the vehicle. When No is selected, the memory system will only recall memory settings when the Driver 1 or Driver 2 push buttons of the memory switch on the driver side front door trim panel are depressed.
- **SOUND HORN ON LOCK?** - The options include Yes and No. The default is No. When Yes is selected, a short horn chirp will provide an audible confirmation when the RKE receiver recognizes a valid Lock signal from an RKE transmitter. When No is selected, no horn chirp will occur with the RKE Lock event. This feature may be selected independent of the **FLASH LIGHTS WITH LOCKS?** programmable feature.
- **FLASH LIGHTS WITH LOCKS?** - The options include Yes and No. The default is Yes. When Yes is selected, a single flash of the hazard warning lamps will provide an optical confirmation when the RKE receiver recognizes a valid Lock signal from an RKE transmitter, and two flashes of the same lamps will occur when the RKE receiver recognizes a valid Unlock signal from an RKE transmitter. When No is selected, no lamp flash will occur with the RKE Lock or Unlock event. This feature may be selected independent of the **SOUND HORN ON LOCK?** programmable feature.
- **HEADLAMP DELAY =** - The options include Off, 30 Sec, 60 Sec, and 90 Sec. The default is 90 Sec. When a time interval is selected, the headlamps will remain on for that length of time when the headlamps are turned off after the ignition is turned off, or if the Auto mode is selected on vehicles with the Auto Headlamps option. When Off is selected, the headlamp delay feature is disabled.
- **HEADLAMPS ON WITH WIPERS?** - This programmable feature only applies to vehicles equipped with the optional Auto Headlamps. The options include Yes and No. The default is No. When Yes is selected, the headlamps will turn on automatically when the windshield wipers are turned on. The headlamps will turn off when the wipers are turned off, as long as the headlamp switch is in the Auto or Off positions. When No is selected, the headlamps will only turn on if manually selected or if the Auto mode is selected and the outside ambient light levels dictate that they should be on.
- **SERVICE INTERVAL =** - The options include from 3200 to 9600 kilometers in 800 kilometer increments (2000 to 6000 miles in 500 mile increments). The default is 9600 kilometers (6000 miles). The selected distance becomes the interval at which the Perform Service warning message will be displayed by the EVIC. If a new distance is selected, a second programmable feature appears, **RESET SERVICE DISTANCE?** - The options include No and Yes. The default is Yes. When Yes is selected, the accumulated distance since the last previous Perform Service warning message will be reset to zero because the service interval has been changed. When No is selected, the distance until the next Perform Service warning message is reduced by the accumulated distance since the last previous message.
- **EASY EXIT SEAT** - This programmable feature only applies to vehicles equipped with the optional memory / heated system. The options include Yes and No. The default is No. When Yes is selected, the driver seat moves rearward about 55 millimeters (two inches) or to the farthest rearward position, whichever comes first, when the key is removed from the ignition switch lock cylinder. This provides additional ease for exiting from the vehicle. The seat will automatically return to the memory system setting position when the Driver 1 or Driver 2 button of the memory switch on the door panel is depressed or, if the **REMOTE LINKED TO MEMORY** programmable feature is enabled, when the RKE Unlock button is depressed. While not automatic, an easy entry fea-

OVERHEAD CONSOLE (Continued)

ture can be obtained by enabling the **EASY EXIT SEAT** feature and disabling the **REMOTE LINKED TO MEMORY** feature. Then the **EASY EXIT SEAT** feature will move the seat back, but the RKE unlock event will not reposition the seat. Thus, the seat remains positioned for easy entry, and the memory switch on the door panel can be depressed after entering the vehicle to return the seat to the desired memory position.

- **SIDE VIEW MIRROR TILT** - This programmable feature only applies to vehicles equipped with the optional memory / heated system. The options include Enable and Disable. The default is Disable. When Enable is selected, both side view mirrors will move straight downward anytime the MHSM module detects a reverse gear indication from the cluster. This feature is designed to allow the driver to see directly behind the rear wheels before backing up.
- **TRAIN REMOTE** - When this feature is selected the driver can choose to train up to four remote keyless entry transmitters. The options include Yes and No. The default is No. When Yes is selected and the MENU button is pressed the EVIC will display "PRESS REMOTE LOCK & UNLOCK THEN PRESS UNLOCK", followed by a chime to indicate the training sequence can commence. You have approximately 30 seconds to train up to four transmitters, after each transmitter is trained a chime will sound indicating that the training was successful. If remote link to memory is "YES" , the first transmitter trained will be associated with memory setting 1 and the second transmitter trained will be associated with memory setting 2. Additional transmitters will not be associated with a memory setting. When you have finished training the transmitters, press the menu button again and the EVIC will display "TRAIN DONE "X" TRAINED. If no transmitters are trained within approx. 30 seconds the EVIC will display "TRAIN TIMEOUT".
- **RETRAIN TIRE SENSORS** - This programmable feature only applies to vehicles equipped with the optional Tire Pressure Monitoring System. The options include Yes and No. The default is No. When Yes is selected, and the menu button is depressed, the EVIC will enter the training mode starting with the left front tire.

REMOVAL - OVERHEAD CONSOLE

(1) Disconnect and isolate the remote negative battery cable.

(2) Remove the overhead console retaining screw, located in the front of console near the windshield.

(3) Using your fingertips, grasp the sides of the overhead console and pull straight down evenly to disengage the two snap clips at the rear of the unit.

(4) Lower the overhead console far enough to access the wire harness connectors.

(5) Disconnect the control module, courtesy lamps and if equipped, the power sunroof switch electrical connectors.

(6) Remove the overhead console assembly from the vehicle.

INSTALLATION

(1) Position the overhead console in the vehicle and connect the wire harness connectors.

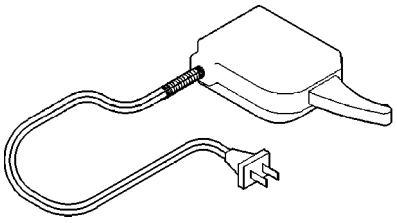
(2) Connect the control module, courtesy lamps and if equipped, the power sunroof switch electrical connector.

(3) Using your fingertips, grasp the sides of the overhead console and push straight up evenly to engage the two snap clips at the rear of the unit.

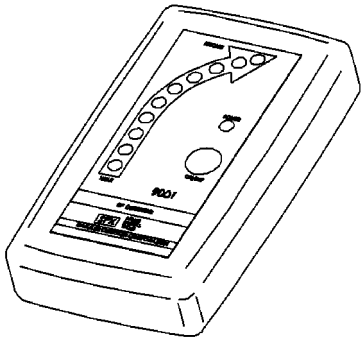
(4) Install the overhead console retaining screw, located in the front of console near the windshield. Torque the screw to 1.2 N·m (10 in. lbs.).

(5) Connect the remote negative battery cable.

SPECIAL TOOLS



Degaussing Tool 6029



Radio Frequency Detector #9001

COMPASS/MINI-TRIP COMPUTER

DESCRIPTION

The Compass Mini-Trip Computer (CMTC) is a module located within the overhead console. This module displays the following information:

- Compass/Temperature
- Average Fuel Economy
- Distance to Empty
- Trip Odometer
- Elapsed Time
- Miles to Service
- Tire Pressure Display (if equipped)
- Blank Screen

When the vehicle is first turned “ON” the Compass Mini-Trip Computer blanks the display for a half second, then Illuminates all segments of the vacuum fluorescent display (VFD) at full brightness for one and a half seconds. The Compass Mini-Trip Computer module will then display whatever was being viewed when the ignition was last turned “OFF”.

Compass Mini-Trip Computer may also be integrated with the Universal Transmitter. If so, your Compass Mini-Trip Computer module will have three buttons centered together between the outer four buttons. Refer to the photo in Overhead Console description.

OPERATION

The Compass Mini-Trip Computer (CMTC) and push buttons will only operate when the ignition is in the ON position. The CMTC will show the last display when the ignition was turned OFF. The four buttons used to operate Compass Mini-Trip Computer are labeled STEP, C/T, US/M and RESET.

STEP BUTTON

Pressing the STEP button selects one the following 4 displays:

- Average fuel economy
- Distance to empty
- Trip odometer
- Elapsed time

C/T (COMPASS/TEMPERATURE) BUTTON

Pressing the C/T button selects the current Compass heading or current Temperature display.

US/M (ENGLISH/METRIC MEASUREMENT) BUTTON

Pressing the US/M button switches the display units in English or Metric readings.

RESET BUTTON

Pressing the RESET button resets the function currently on the display, provided that function can be reset. The functions which can be reset are Average fuel economy, Trip odometer and Elapsed time. The RESET button is also used to set the variance and/or calibrate the compass. Refer to the Variance Procedure and Calibration Procedure in this section.

DIAGNOSIS AND TESTING - COMPASS MINI-TRIP COMPUTER

TEMPERATURE

The Compass Mini-Trip Computer (CMTC) receives Programmable Communications Interface bus (PCI bus) messages from the Body Control Module for all displayed information except the compass display. If a dash (-) is displayed, the Compass Mini-Trip Computer is not receiving a PCI bus message from the BCM. To check out the PCI bus line and the BCM use the DRB lll® scan tool and proper Body Diagnostic Procedure Manual.

If Compass Mini-Trip Computer displays a temperature reading more than 54° C (130° F). Check for a short circuit between the temperature sensor and the BCM.

If Compass Mini-Trip Computer displays a temperature reading less than -40° C (-67° F). Check for an open circuit between the temperature sensor and the BCM.

AVERAGE FUEL ECONOMY

Compass Mini-Trip Computer receives average fuel economy information from the BCM over the PCI bus line. If Compass Mini-Trip Computer displays -.- instead of an average fuel economy value, it is not receiving a PCI bus message for the average fuel economy from the BCM. To check out the PCI bus line and the BCM use the DRB lll® scan tool.

DISTANCE TO EMPTY

Compass Mini-Trip Computer receives distance to empty information from the BCM over the PCI bus line. If Compass Mini-Trip Computer displays a dash (-) instead of a distance to empty value, it is not receiving a PCI bus message for the distance to empty from the BCM. To check out the PCI bus line and the BCM use the DRB lll® scan tool.

COMPASS/MINI-TRIP COMPUTER (Continued)

TRIP ODOMETER

Compass Mini-Trip Computer receives trip odometer information from the Cluster over the PCI bus line. If Compass Mini-Trip Computer displays dashes -.- instead of the trip odometer value, it is not receiving a PCI bus message for the trip odometer from the Cluster. To check out the PCI bus line and the BCM, use the DRB lll® scan tool.

ELAPSED TIME

Compass Mini-Trip Computer receives a PCI bus message containing elapsed time information. If Compass Mini-Trip Computer displays dashes -:-- instead of the elapsed time, it is not receiving a PCI bus message for the elapsed time from the BCM. To check out the PCI bus line and the BCM, use the DRB lll® scan tool.

COMPASS DISPLAY

To display the vehicle direction, the Compass Mini-Trip Computer processes information from a sensor internal to the module. The Compass Mini-Trip Computer is self- calibrating and requires only variance adjustments dependent upon location. The Compass Mini-Trip Computer displays the label CAL whenever the compass is in the fast calibration mode.

If all three of the following conditions listed below occur, the vehicle must be demagnetized.

- Compass portion of the display is blank
- Temperature portion of the display is OK
- The label CAL is illuminated

If demagnetizing the vehicle is needed, refer to the demagnetizing procedure in this section. After demagnetizing, to calibrate the compass refer to Calibration Procedure and to set the variance refer to Variance Procedure, both within this section. If the compass portion of the display is still blank, replace the Compass Mini-Trip Computer.

COMPASS MINI-TRIP COMPUTER - SELF DIAGNOSTIC TEST

(1) With the ignition switch in the OFF position simultaneously press the C/T and STEP buttons and hold.

(2) Turn ignition switch ON, then release C/T and STEP buttons.

(3) Compass Mini-Trip Computer lights all segments on the VFD for 2-4 seconds. Check for segments that are not illuminated.

(4) If Compass Mini-Trip Computer displays PASS, the module is OK.

(5) If Compass Mini-Trip Computer displays FAIL, replace the module.

(6) If Compass Mini-Trip Computer displays bUS, check for an open or a short in the PCI bus communication circuit.

(7) Press the C/T or the STEP button to exit self-test.

REMOVAL

(1) Remove overhead console (Refer to 8 - ELECTRICAL/OVERHEAD CONSOLE - REMOVAL).

(2) Remove mounting screws and release the map lamp wire connector from the Compass Mini-Trip Computer (Fig. 7).

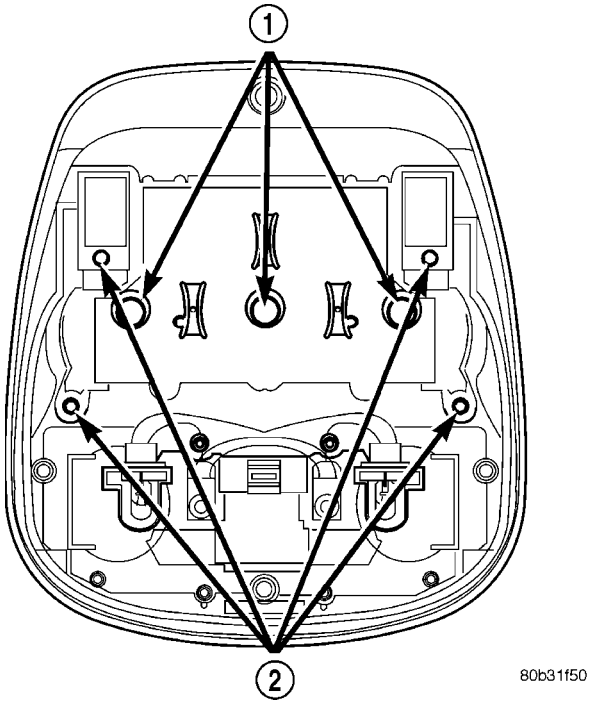


Fig. 7 Compass Mini-Trip Computer Retaining Screws

1 - ILLUMINATION LAMPS
2 - CMTC RETAINING SCREWS

(3) Remove the Compass Mini-Trip Computer from overhead console.

INSTALLATION

(1) Position the Compass Mini-Trip Computer and install the retaining screws.

(2) Connect the Compass Mini-Trip Computer electrical connector. Make sure the wire that was clipped into the module housing is properly clipped into the new module before the overhead console is placed back into the headliner.

(3) Install the overhead console (Refer to 8 - ELECTRICAL/OVERHEAD CONSOLE - INSTALLATION).

ELECTRONIC VEHICLE INFO CENTER

DESCRIPTION

The Electronic Vehicle Information Center (EVIC) is located in the overhead console on models equipped with this option. The EVIC module features a large Vacuum Fluorescent Display (VFD) screen for displaying information, and back-lit push button function switches labeled C/T (compass/temperature), RESET, STEP, and MENU.

The EVIC module contains a central processing unit and interfaces with other electronic modules in the vehicle over the Programmable Communications Interface (PCI) data bus network. The PCI data bus network allows the sharing of sensor information. This helps to reduce wire harness complexity, reduce internal controller hardware, and reduce component sensor current loads. At the same time, this system provides increased reliability, enhanced diagnostics, and allows the addition of many new feature capabilities.

The EVIC includes the following display options:

- **Compass and temperature** - provides the outside temperature and one of eight compass readings to indicate the direction the vehicle is facing.
- **Average fuel economy** - shows the average fuel economy since the last trip computer reset.
- **Distance to empty** - shows the estimated distance that can be travelled with the fuel remaining in the fuel tank. This estimated distance is computed using the average miles-per-gallon from the last 30 gallons of fuel used.
- **Trip odometer** - shows the distance travelled since the last trip computer reset.
- **Elapsed time** - shows the accumulated ignition-on time since the last trip computer reset.
- **Distance to service** - shows the distance remaining until the next scheduled service interval.
- **Tire Pressure** - shows tire pressure in each road tire.
- **Blank screen** - the EVIC compass/temperature/trip computer VFD is turned off.

The EVIC “Menu” push button provides the vehicle operator with a user interface, which allows the selection of several optional customer programmable electronic features to suit individual preferences. Refer to **ELECTRONIC VEHICLE INFORMATION CENTER PROGRAMMING** in the Service Procedures section of this group for more information on the customer programmable feature options.

If the vehicle is equipped with the optional Universal Transmitter, the EVIC will also display messages and an icon indicating when the Universal Transmitter is being trained, which of the three transmitter buttons is transmitting, and when the transceiver is cleared.

If the vehicle is equipped with the optional **Tire Pressure Monitoring System**, the EVIC will also display messages and an icon indicating when the tire air pressure falls below a given set-point, and which of the five tires is transmitting the low pressure warning, and when the condition is cleared. Refer to the Tires/Wheels section of this manual for complete Tire Pressure Monitoring System description. Refer to this section of the service manual for EVIC modules function description for the Tire Pressure Monitoring.

NOTE: Some 300M vehicles use a different recommended tire pressure (tire specified). For this reason, anytime a EVIC module is removed or replaced a DRB III® scan tool must be used to set/verify that the correct tire pressure set-point is programmed in the EVIC module. Failure to do so could result in incorrect tire pressure monitoring set points.

Data input for all EVIC functions, including VFD dimming level, is received through PCI data bus messages. The EVIC module uses its internal programming and all of its data inputs to calculate and display the requested data. If the data displayed is incorrect, perform the self-diagnostic tests as described in this group. If these tests prove inconclusive, the use of a DRB III® scan tool and the proper Diagnostic Procedures manual are recommended for further testing of the EVIC module and the PCI data bus.

The EVIC module cannot be repaired, and is available for service only as a unit. This unit includes the push button switches and the plastic module. If any of these components is faulty or damaged, the complete EVIC module must be replaced. The incandescent bulbs used for EVIC push button back-lighting and the lens are available for service replacement.

DESCRIPTION - COMPASS

While in the compass/temperature mode, the compass will display the direction in which the vehicle is pointed using the eight major compass headings (Examples: north is N, northeast is NE). The self-calibrating compass unit requires no adjusting in normal use. The only calibration that may prove necessary is to drive the vehicle in three complete circles at 5 to 8 kilometers-per-hour (3 to 5 miles-per-hour), on level ground, in not less than forty-eight seconds. This will reorient the compass unit to its vehicle.

The compass unit also will compensate for magnetism the body of the vehicle may acquire during normal use. However, avoid placing anything magnetic directly on the roof of the vehicle. Magnetic mounts

ELECTRONIC VEHICLE INFO CENTER (Continued)

for an antenna, a repair order hat, or a funeral procession flag can exceed the compensating ability of the compass unit if placed on the roof panel. Magnetic bit drivers used on the fasteners that hold the overhead console assembly to the roof header can also affect compass operation. If the vehicle roof should become magnetized, the demagnetizing and calibration procedures found in this group may be required to restore proper compass operation.

DESCRIPTION - TEMPERATURE

The temperature displays the outside ambient temperature in whole degrees. The temperature display can be toggled from Fahrenheit to Celsius by selecting the desired U.S./Metric option from the customer programmable features as described in **ELECTRONIC VEHICLE INFORMATION CENTER PROGRAMMING** in the Service Procedures section of this group. The displayed temperature is not an instant reading of conditions, but an average temperature. It may take the thermometer display several minutes to respond to a major temperature change, such as driving out of a heated garage into winter temperatures.

When the ignition switch is turned to the Off position, the last displayed temperature reading stays in the Body Control Module (BCM) unit memory. When the ignition switch is turned to the On position again, the EVIC will display the memory temperature for one minute; then update the display to the current average temperature reading within five minutes.

The temperature function is supported by an ambient temperature sensor. The sensor is mounted outside the passenger compartment near the front and center of the vehicle, and is hard wired to the Body Control Module (BCM). The BCM sends temperature status messages to the EVIC module over the PCI data bus network. The ambient temperature sensor is available as a separate service item.

OPERATION

The EVIC is wired to both non-switched and ignition switched sources of battery current so that some of its features remain operational at any time, while others may only operate with the ignition switch in the On position. When the ignition switch is turned to the On position, the EVIC module VFD will return to the last function being displayed before the ignition was turned to the Off position.

The compass/temperature display is the normal EVIC display. With the ignition switch in the On position, momentarily depressing and releasing the C/T (compass/temperature) push button switch will cause the EVIC to return to the compass/temperature/trip computer display mode from any other mode. While in the compass/temperature/trip computer display mode, momentarily depressing and releasing the Step push button will step through the available trip computer display options.

The EVIC trip computer features several functions that can be reset. The functions that can be reset are: average fuel economy, trip odometer and elapsed time. With the ignition switch in the On position and with one of the functions of the trip computer that can be reset currently displayed, depressing the Reset push button twice within three seconds will perform a global reset, and all of the trip computer information that can be reset will be reset to zero. With the ignition switch in the On position and the function that is to be reset currently displayed, momentarily depressing and releasing the Reset push button once will perform a local reset, and only the value of the displayed function will be reset to zero. A global or local reset will only occur if the function currently displayed is a function that can be reset. The distance to service function can also be reset using the local reset method, but it will reset back to the Service Interval distance that is set in the EVIC programmable features mode. Refer to **ELECTRONIC VEHICLE INFORMATION CENTER PROGRAMMING** in the Service Procedures section of this group for more information on setting the Service Interval.

For more information on the features, control functions and setting procedures for the EVIC module, see the owner's manual in the vehicle glove box.

DIAGNOSIS AND TESTING - ELECTRONIC VEHICLE INFORMATION CENTER

If the problem with the EVIC is an inaccurate or scrambled display, refer to **Self-Diagnostic Test** in the Diagnosis and Testing section of this group. If the problem with the EVIC is incorrect Vacuum Fluorescent Display (VFD) dimming levels, use a DRB scan tool and the proper Diagnostic Procedures manual to test for the correct dimming message inputs being received from the Body Control Module (BCM) over the Programmable Communications Interface (PCI) data bus. If the problem is a no-display condition, use the following procedures. For complete circuit diagrams, refer to **Overhead Console** in Wiring Diagrams.

(1) Check the fused B(+) fuse in the junction block. If OK, go to Step 2. If not OK, repair the shorted circuit or component as required and replace the faulty fuse.

(2) Check for battery voltage at the fused B(+) fuse in the junction block. If OK, go to Step 3. If not OK, repair the open fused B(+) circuit to the fused B(+) fuse in the PDC as required.

ELECTRONIC VEHICLE INFO CENTER (Continued)

(3) Check the fused ignition switch output (run/start) fuse in the junction block. If OK, go to Step 4. If not OK, repair the shorted circuit or component as required and replace the faulty fuse.

(4) Turn the ignition switch to the On position. Check for battery voltage at the fused ignition switch output (run/start) fuse in the junction block. If OK, go to Step 5. If not OK, repair the open fused ignition switch output (run/start) circuit to the ignition switch as required.

(5) Turn the ignition switch to the Off position. Disconnect and isolate the battery negative cable. Remove the overhead console. Check for continuity between the ground circuit cavity of the roof wire harness connector for the EVIC module and a good ground. There should be continuity. If OK, go to Step 6. If not OK, repair the open ground circuit to ground as required.

(6) Connect the battery negative cable. Check for battery voltage at the fused B(+) circuit cavity of the roof wire harness connector for the EVIC module. If OK, go to Step 7. If not OK, repair the open fused B(+) circuit to the fused B(+) fuse in the junction block as required.

(7) Turn the ignition switch to the On position. Check for battery voltage at the fused ignition switch output (run/start) circuit cavity of the roof wire harness connector for the EVIC module. If OK, refer to **Self-Diagnostic Test** in the Diagnosis and Testing section of this group for further diagnosis of the EVIC module and the PCI data bus. If not OK, repair the open fused ignition switch output (run/start) circuit to the fuse in the junction block as required.

SELF-DIAGNOSTIC TEST

A self-diagnostic test is used to determine that the EVIC module is operating properly, and that all PCI data bus messages are being received for initial operation. Initiate the self-diagnostic test as follows:

(1) With the ignition switch in the Off position, simultaneously depress and hold the **C/T button** and the **Reset button**.

(2) Turn the ignition switch to the On position.

(3) Continue to hold both buttons depressed until the EVIC software version information is displayed, then release both buttons.

(4) Following completion of these tests, the EVIC module will display one of the following messages:

- **PASS SELF TEST** - Momentarily depress and release the Reset button to return to the compass/temperature/trip computer display mode. The EVIC module is working properly.
- **FAILED SELF TEST** - The EVIC module has an internal failure. The EVIC module is faulty and must be replaced.
- **NOT RECEIVING J1850 MESSAGE** - The EVIC module is not receiving proper message input through the PCI data bus. This can result from one or more faulty electronic modules in the vehicle, or from a faulty PCI data bus. The use of a DRB scan tool and the proper Diagnostic Procedures manual are required for further diagnosis.

NOTE: If the compass functions, but accuracy is suspect, it may be necessary to perform a variation adjustment. This procedure allows the compass unit to accommodate variations in the earth's magnetic field strength, based on geographic location. Refer to Compass Variation Adjustment in the Service Procedures section of this group.

NOTE: If the compass reading displays a blank, and only "CAL" appears in the display, demagnetizing may be necessary to remove excessive residual magnetic fields from the vehicle. Refer to Compass Demagnetizing in the Service Procedures section of this group.

STANDARD PROCEDURE - TIRE PRESSURE SYSTEM TEST

The following test can be used to verify two functions. One, that the tire pressure sensors are transmitting properly and two, the EVIC module is receiving these transmissions accordingly.

(1) Retrain the tire sensors (Refer to 22 - TIRES/WHEELS/TIRE PRESSURE MONITORING/SENSOR - STANDARD PROCEDURE). The tire sensors must be retrained in order to set the proper transmitting time cycle (twice a minute), failure to retrain the sensors will cause a much slower transmitting time cycle (once a minute).

(2) Using the STEP button on the overhead console, scroll to the blank display, then press the RESET button for five seconds, a beep will sound indicating the start of this test. The vehicle icon and transmission counters will now be displayed, (same display as individual tire pressure except counters replace tire pressure values).

(3) Upon entering the test mode, the EVIC will clear the sensor counter and each time a sensor signal for a road tire is received, the EVIC will update the counter value (vehicle must be driven at 25 mph to transmit). The counter values should all read close to the same value (± 5), except for the spare tire counter. If any of the road tires display a difference of more than five, this is a sign of a problem. Replace the appropriate tire sensor and retest the system. This test will continue until any of the overhead console buttons are pressed or the ignition is turned off.

ELECTRONIC VEHICLE INFO CENTER (Continued)

NOTE: Pressing the RESET button during the test will sound a beep and reset all the counter values back to zero.

REMOVAL

(1) Disconnect and isolate the battery negative cable.

(2) Remove the overhead console from the headliner (Refer to 8 - ELECTRICAL/OVERHEAD CONSOLE - REMOVAL).

(3) Remove the four screws that secure the Electronic Vehicle Information Center (EVIC) module to the overhead console housing (Fig. 8).

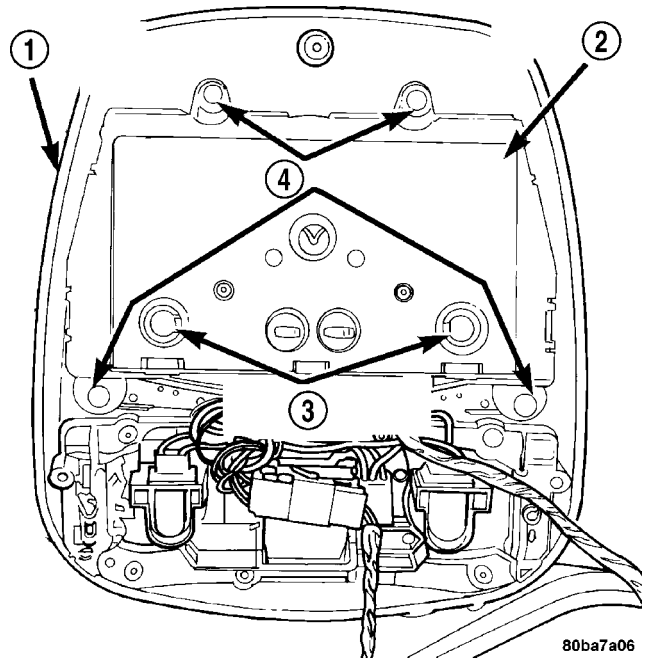


Fig. 8 Electronic Vehicle Information Center (EVIC) Module

1 - OVERHEAD CONSOLE HOUSING
2 - EVIC MODULE
3 - VFD ILLUMINATION LAMPS
4 - SCREWS

(4) Remove the EVIC module from the overhead console housing.

NOTE: If the EVIC module is being replaced, the tire pressure monitoring system must be programmed. Refer to the tires/wheels section of this manual for detailed instructions.

INSTALLATION

(1) Position the EVIC module onto the overhead console housing.

(2) Install and tighten the four screws that secure the EVIC module to the overhead console housing. Tighten the screws to 0.9 N·m (8 in. lbs.).

(3) Install the overhead console onto the headliner (Refer to 8 - ELECTRICAL/OVERHEAD CONSOLE - INSTALLATION).

(4) Reconnect the battery negative cable.

NOTE: If a new compass mini-trip computer has been installed, the compass will have to be calibrated and the variance set. Refer to compass variation adjustment and compass calibration in the service procedures section of this group for the procedures.

NOTE: If the evic module is being replaced, the tire pressure monitoring system must be programmed. Refer to the tires/wheels section of this manual for detailed instructions.

NOTE: Some 300m vehicles use a different recommended tire pressure (tire specified). For this reason, anytime a evic module is removed or replaced a DRB III® scan tool must be used to set/verify that the correct tire pressure set-point is programmed in the evic module. Failure to do so could result in incorrect tire pressure monitoring set points.

UNIVERSAL TRANSMITTER

DESCRIPTION

On some LH models a Universal Transmitter is standard factory-installed equipment. The universal transmitter transceiver is integral to the Electronic Vehicle Information Center (EVIC), which is located in the overhead console. The only visible component of the universal transmitter are the three transmitter push buttons centered between the four EVIC push buttons located just rearward of the EVIC display screen in the overhead console. The three universal transmitter push buttons are identified with one, two or three light indicators so that they be easily identified by sight.

Each of the three universal transmitter push buttons controls an independent radio transmitter channel. Each of these three channels can be trained to transmit a different radio frequency signal for the remote operation of garage door openers, motorized gate openers, home or office lighting, security systems or just about any other device that can be equipped with a radio receiver in the 288 to 410 MegaHertz (MHz) frequency range for remote operation. The universal transmitter is capable of operating systems using either rolling code or non-rolling code technology.

UNIVERSAL TRANSMITTER (Continued)

The EVIC module displays messages and a small house-shaped icon with one, two or three dots corresponding to the three transmitter buttons to indicate the status of the universal transmitter. The EVIC messages are:

- **Cleared Channels** - Indicates that all of the transmitter codes stored in the universal transmitter have been successfully cleared.
- **Training** - Indicates that the universal transmitter is in its transmitter learning mode.
- **Trained** - Indicates that the universal transmitter has successfully acquired a new transmitter code.
- **Transmit** - Indicates that a trained universal transmitter button has been depressed and that the universal transmitter is transmitting.

The universal transmitter cannot be repaired, and is available for service only as a unit with the EVIC module. This unit includes the push button switches and the plastic module. If any of these components is faulty or damaged, the complete EVIC module must be replaced.

OPERATION

The universal transmitter operates on a non-switched source of battery current so the unit will remain functional, regardless of the ignition switch position. For more information on the features, programming procedures and operation of the universal transmitter, see the owner's manual in the vehicle glove box.

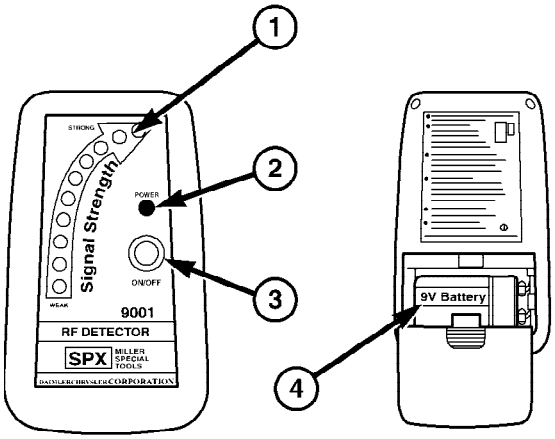
DIAGNOSIS AND TESTING - UNIVERSAL TRANSMITTER

If the Universal Transmitter is inoperative, but the Electronic Vehicle Information Center (EVIC) is operating normally, see the owner's manual in the vehicle glove box for instructions on training the Transmitter. Retrain the Transmitter with a known good transmitter as instructed in the owner's manual and test the Transmitter operation again. If the unit is still inoperative, test the universal transmitter with Radio Frequency Detector special tool (Fig. 9). If both the Transmitter and the EVIC module are inoperative, refer to **Electronic Vehicle Information Center Diagnosis and Testing** in this group for further diagnosis. For complete circuit diagrams, refer to **Wiring Diagrams**. as described below:

(1) Turn the Radio Frequency (RF) Detector ON. A "chirp" will sound and the green power LED will light. If the green LED does not light, replace the battery.

(2) Hold the RF detector within one inch of the TRAINED universal transmitter and press any of the transmitters buttons.

(3) The red signal detection LEDs will light and the tool will beep if a radio signal is detected. Repeat this test three times.



80f230cb

Fig. 9 Radio Frequency Detector

1 - SIGNAL DETECTION LED'S
2 - POWER LED
3 - ON/OFF SWITCH
4 - 9V BATTERY

STANDARD PROCEDURE

STANDARD PROCEDURE - ERASING UNIVERSAL TRANSMITTER CODES

To erase the universal transmitter codes, simply hold down the two outside buttons until the red LED begins to flash.

NOTE: Individual channels cannot be erased. Erasing the transmitter codes will erase ALL programmed codes.

STANDARD PROCEDURE - SETTING UNIVERSAL TRANSMITTER CODES

(1) Turn off the engine.

(2) Erase the factory test codes by pressing the two outside buttons. Release the buttons when the red light begins to flash (about 20 seconds).

(3) Choose one of the three buttons to train. Place the hand-held transmitter within one inch of the universal transmitter and push the buttons on both transmitters. The red light on the universal transmitter will begin to flash slowly.

UNIVERSAL TRANSMITTER (Continued)

(4) When the red light on the universal transmitter begins to flash rapidly (this may take as long as 60 seconds), release both buttons. Your universal transmitter is now “trained”. To train the other buttons, repeat Step 3 and Step 4. Be sure to keep your hand-held transmitter in case you need to retrain the universal transmitter.

AMBIENT TEMPERATURE SENSOR

DESCRIPTION

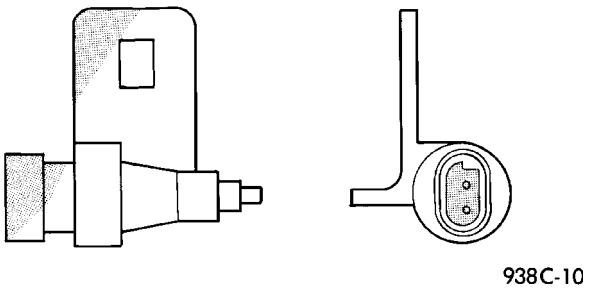


Fig. 10 Ambient Temperature Sensor

Ambient air temperature is monitored by the Electronic Vehicle Information Center (EVIC) through ambient temperature messages received from the Powertrain Control Module (PCM) over the Programmable Communications Interface (PCI) data bus network. The PCM receives a hard wired input from the ambient temperature sensor (Fig. 10). The ambient temperature sensor is a variable resistor mounted to a bracket that is secured with a screw to the right side of the headlamp mounting module grille opening, behind the radiator grille and in front of the engine compartment.

Refer to **Powertrain Control Module** in Electronic Control Modules for more information. For complete circuit diagrams, refer to the appropriate wiring information. The ambient temperature sensor cannot be adjusted or repaired and, if faulty or damaged, it must be replaced.

OPERATION

The ambient temperature sensor is a variable resistor that operates on a five-volt reference signal sent to it by the Powertrain Control Module (PCM). The resistance in the sensor changes as temperature changes, changing the temperature sensor signal circuit voltage to the PCM. Based upon the resistance in the sensor, the PCM senses a specific voltage on the temperature sensor signal circuit, which it is programmed to correspond to a specific temperature. The PCM then sends the proper ambient temperature messages to the EVIC over the PCI data bus.

The thermometer function is supported by the ambient temperature sensor, a wiring circuit, the Powertrain Control Module (PCM), the Programmable Communications Interface (PCI) data bus, and a portion of the Electronic Vehicle Information Center (EVIC) module. If any portion of the ambient temperature sensor circuit fails, the PCM will self-diagnose the circuit.

DIAGNOSIS AND TESTING - AMBIENT TEMPERATURE SENSOR

(1) Turn the ignition switch to the Off position. Disconnect and isolate the battery negative cable. Disconnect the ambient temperature sensor wire harness connector.

(2) Measure the resistance of the ambient temperature sensor. At room temperature (approx. 68°F), the sensor resistance should be between 9-11 Kilohms (9000-11000 ohms). The sensor resistance should read between these two values. If OK, the sensor is OK at this time. If not OK, replace the faulty ambient temperature sensor.

REMOVAL

(1) Open hood, disconnect and isolate the negative battery cable remote terminal from the remote battery post (Fig. 11).

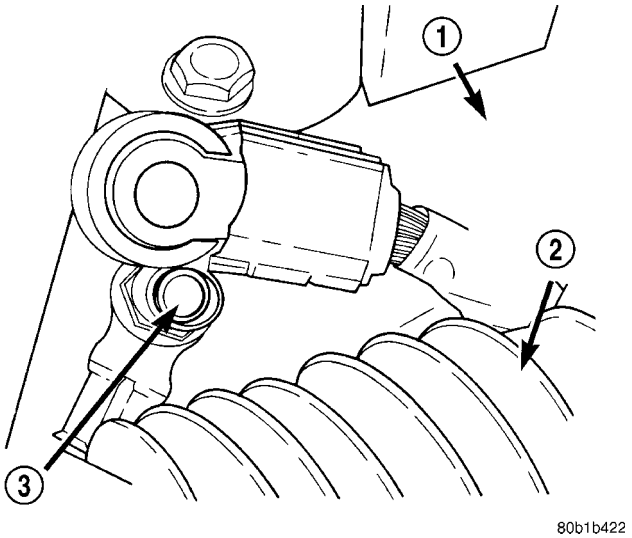


Fig. 11 Negative Battery Cable Remote Terminal

1 - RIGHT STRUT TOWER
2 - AIR CLEANER INLET TUBE
3 - REMOTE TERMINAL

(2) Raise and support the vehicle on safety stands.

(3) From behind front bumper fascia, remove the screw attaching the ambient temperature sensor to radiator closure panel.

AMBIENT TEMPERATURE SENSOR (Continued)

INSTALLATION

(1) Connect the ambient temperature sensor electrical connector.

(2) Install the ambient temperature sensor retaining screw.

(3) Connect the negative battery cable.